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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/727,166	11/30/2000	Harold A. Dvorachek	1709898	2672

24240 7590 06/03/2002

CHAPMAN AND CUTLER
111 WEST MONROE STREET
CHICAGO, IL 60603

EXAMINER

KRECK, JOHN J

ART UNIT PAPER NUMBER

3673

DATE MAILED: 06/03/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/727,166

Applicant(s)

DVORACHEK, HAROLD A.

Examiner

John Kreck

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 May 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-36 and 38-50 is/are pending in the application.
- 4a) Of the above claim(s) 16-19, 26-30 and 44-50 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-15, 20-25 and 31-43 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4
- ☐ Interview Summary (PTO-413) Paper No(s) _____
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other:

DETAILED ACTION

1. Applicant's election without traverse of claims 1-15, 20-25, 29, and 31-43 in Paper No. 8 is acknowledged. The election of claim 29 is questioned, because claim 29 depends from non-elected claim 28, which apparently reads on a nonelected species; thus claim 29 is withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected species, there being no allowable generic or linking claim. It is further noted that claim 37 is missing from the application.
2. Claims 1-15, 20-25, and 31-36, 38-43 are examined below.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 6, 7, 11-15, 20-25, 35, 36, 38, and 41 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 6 and 7 recite the limitations "the circumferentially engageable structure" and "said engageable structure". There is insufficient antecedent basis for this limitation in the claim.

Claim 11 is unclear when considered in view of claim 12. Claim 11 calls for "the total length of the cutting element"; however claim 12 states "further comprising a contact structure". Since it is apparent that the contact structure has a length which

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should be considered a part of the cutting element length; this is unclear. Claim 21 has a similar limitation.

Claim 36 recites the limitation "the mounting body". There is insufficient antecedent basis for this limitation in the claim.

Claim 38 recites the limitation "the mounting portion". There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1-7, 10, 11-15, and 20-25 are rejected under 35 U.S.C. 102(b) as being anticipated by Kniff (U.S. Patent number 3,807,804).

Kniff shows an elongated cutting element comprising a contact structure (16); a tapered structure (the lower end of 34 as viewed in figure 3, or 22 in figure 1)); a circumferentially engageable portion (the upper end of 34); a threadably engageable mounting structure (36); wherein at least a portion of the contact structure is harder than 67 on the Rockwell C scale (tungsten carbide, col. 2, line 30); and wherein the total length of the cutting element divided by the largest diameter of the cutting element is less than 3.25 (see col. 3, lines 31-33) as called for in claim 1.

Kniff also teaches the carbide of a metallic element (WC) as called for in claim 2.

Kniff also teaches the brazing (col. 2, line 45) as called for in claim 3.

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Kniff also teaches the tapered thread as called for in claim 4.

Kniff also teaches ferrous material as called for in claim 5.

Kniff also teaches the circumferentially engageable portion between the contact structure and the distal end as called for in claim 6.

Kniff also teaches the engageable portion projects outwardly as called for in claim 7.

Kniff also shows the included angle greater than 90° and less than 150° as called for in claim 10.

Regarding independent claim 11:

Kniff shows a compact elongated cutting element comprising a generally pointed distal end structure (16); a mounting structure 934) an axially engageable feature (the flat portion adjacent 26 is axially engageable); a proximal end (26); wherein at least a portion of the contact structure is harder than 68 on the Rockwell C scale (tungsten carbide, col. 2, line 30); and wherein the total length of the cutting element divided by the largest diameter of the cutting element is less than 3.25 (see col. 3, lines 31-33) as called for in claim 11.

Kniff also shows the contact structure as called for in claim 12.

Kniff also shows the carbide of a metallic element (WC) as called for in claim 13.

Kniff also teaches the brazing (col. 2, line 45) as called for in claim 14.

Kniff also teaches the cutting element radially symmetric as called for in claim 15.

Kniff also teaches length of the cutting element divided by the largest diameter of the cutting element is less than 3 as called for in claim 20.

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Kniff also shows the contact structure as called for in claim 21.

Kniff also shows the carbide of a metallic element (WC) as called for in claim 22.

Kniff also teaches the brazing (col. 2, line 45) as called for in claim 23.

Kniff also teaches the cutting element radially symmetric as called for in claim 24.

Kniff also teaches the axially engageable structure as called for in claim 25.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 8, 9, 31-36, and 38-40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kniff in view of Evans (U.S. Patent number 4,148,368).

Kniff teaches all of the limitations of claim 1, from which these claims depend, but fails to explicitly disclose the polycrystalline material having a hardness greater than 92 on the Rockwell C scale.

It is well known in the rock cutting arts that harder materials are useful because they cut hard rock more effectively, and wear less. Evans shows a similar cutting element which includes a first material (74) which is a polycrystalline material having a hardness greater than 92 on the Rockwell C scale.

It would have been obvious to one of ordinary skill in the art at the time of the invention to have modified the Kniff tool to have the polycrystalline material having a

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hardness greater than 92 on the Rockwell C scale as called for in claim 8, in order to cut hard rock more effectively, and wear less quickly.

With regards to claim 9; Evans teaches the diamond, thus it would have been obvious to one of ordinary skill in the art at the time of the invention to have included diamond as called for in claim 9, in order to cut hard rock more effectively, and wear less quickly.

Regarding independent claim 31:

Kniff shows a cutting element comprising a contact structure of a first material (16); a generally tapered shoulder comprised of a second material (the lower end of 34 as viewed in figure 3, or 22 in figure 1) and wherein the total length of the cutting element divided by the largest diameter of the cutting element is less than 3.25 (see col. 3, lines 31-33) Kniff fails to teach the hardness of the second material at least 1000 on the Vickers scale and the hardness of the first material at least 300 points harder on the Vickers scale as called for in claim 31.

It is well known in the rock cutting arts that harder materials are useful because they cut hard rock more effectively, and wear less. Evans shows a similar cutting element which includes a first material (74- polycrystalline diamond) which is a polycrystalline material and a second material (64- WC) having a hardness greater than 1000 on the Vickers scale; the first material material at least 300 points harder on the Vickers scale.

It would have been obvious to one of ordinary skill in the art at the time of the invention to have modified the Kniff tool so that the second material has a hardness

greater than 1000 on the Vickers scale; and the first material at least 300 points harder on the Vickers scale as called for in claim 31, in order to cut hard rock more effectively, and wear less quickly.

Kniff also shows the column as called for in claim 32.

Regarding claim 33; Evans teaches the cross sectional area of the column less than 10% of the cross sectional area of the shoulder. It is apparent that the cost of diamond is such that a small cross sectional area is desirable. It would have been further obvious to one of ordinary skill in the art at the time of the invention to have modified the Kniff tool so that the cross sectional area of the column is less than 10% of the cross sectional area of the shoulder as called for in claim 33, in order to reduce costs.

Kniff also shows the support structure as called for in claim 34.

Kniff also shows the mounting body as called for in claim 35.

Kniff also teaches the brazing (col. 2, line 45) as called for in claim 36.

Kniff also shows the mounting portion is threaded as called for in claim 38.

Kniff also teaches the tapered thread as called for in claim 39.

Kniff also teaches ferrous material as called for in claim 40.

7. Claims 41-43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kniff and Evans as applied to claim 36 above, and further in view of Drake (U.S. Patent number 4,595,067).

Kniff and Evans teach all of the limitations of Claim 36, from which claims 41-43 depend, but fail to disclose the non-circular, circumferentially engageable structure.

It is well known in the art to provide a non-circular, circumferentially engageable structure on similar tools, in order to rotate them. This is shown by Drake.

It would have been obvious to one of ordinary skill in the art at the time of the invention to have further modified the Kniff tool to have a non-circular, circumferentially engageable structure between the contact structure and the proximal end as called for in claim 41, in order to rotate the cutting element and facilitate threading it in to place.

Kniff also teaches the engageable portion projects outwardly as called for in claim 42.

With regards to claim 43, Drake does not explicitly disclose the cross section of the non-circular, circumferentially engageable structure; however it is notoriously conventional to make such structures hexagonal, in order to use common hand tools. It would have been further obvious to one of ordinary skill in the art at the time of the invention to have made the non-circular, circumferentially engageable structure to have a hexagonal cross section as called for in claim 43, in order to use common hand tools.

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Torbet (U.S. Patent number 6,283,234); Tibbits, et al. (U.S. Patent number 5,678,645); Latham (U.S. Patent number 5,098,167); and Thompson (U.S. Patent number 4,199,035) show similar tools with threaded sections. Stroud (U.S. Patent number 4,854,405); Busby (U.S. Patent number 4,339,009); and Scott, et al. (U.S. Patent number 5,248,006) show similar tools with central cores of harder material.


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Any inquiry concerning this communication or earlier communications from the examiner should be directed to John Kreck whose telephone number is (703)308-2725. The examiner can normally be reached on 6:30-3:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Heather Shackelford can be reached on (703)308-2978. The fax phone numbers for the organization where this application or proceeding is assigned are (703)305-3597 for regular communications and (703)305-7687 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)306-4177.

JJK
May 20, 2002


DAVID BAGNELL
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 3600